

CLAIMS

What is claimed is:

1. An apparatus for spreading an article of laundry from a load of articles of laundry, the apparatus comprising:
 - a first moveable clamp;
 - a second moveable clamp;
 - a conveyor operable to convey the article of laundry away from the first and second clamps, the conveyor having a center line parallel with a direction of conveyance;
 - wherein the both the first and second moveable clamps are operable to clamp the article of laundry while positioned on a first side of the center line and both the first and second moveable clamps are operable to move to a second side of the center line opposite the first side while clamping the article of laundry.
2. The apparatus of Claim 1 wherein the first and second moveable clamps each comprise a pair of jaws, an endless loop connected with a motor and an actuator.
3. The apparatus of Claim 1 wherein the first moveable clamp is operable to release the article of laundry on the second side of the centerline and the second moveable clamp is operable to maintain the clamp on the article of laundry while returning to the first side of the center line.
4. The apparatus of Claim 1 wherein the first and second moveable clamps are positioned above the conveyor and move horizontally relative to the conveyor.
5. The apparatus of Claim 1 wherein the second moveable clamp is operable to release the article of laundry on the first side of the centerline and on top of the conveyor.

6. The apparatus of Claim 1 further comprising a pinch roller, the second clamp operable to clamp the article of laundry adjacent to the pinch roller.
7. The apparatus of Claim 1 further comprising a belt with a roller positioned on the second side of the centerline below a release point of the first moveable clamp, an axis of the roller angled away from horizontal, wherein the second moveable clamp is operable to drag at least a portion of the article of laundry over the belt as the second moveable clamp returns to the first side of the center line.
8. A method for spreading an article of laundry from a load of articles of laundry, the apparatus comprising:
 - (a) clamping the article of laundry at a first location;
 - (b) clamping the article of laundry one of at and adjacent to a corner in addition to the first location;
 - (c) displacing both the first location and the corner in a substantially same first direction while the article of laundry is clamped;
 - (d) releasing the first location; and
 - (e) displacing the corner in a second direction substantially opposite the first direction after (d).
9. The method of Claim 8 wherein (c) comprises displacing the first location and the corner from a first side of a centerline of a conveyor to a second side of the centerline of the conveyor and (e) comprises displacing the corner back to the first side of the centerline of the conveyor.
10. The method of Claim 8 wherein (c) and (e) comprise moving the article of laundry horizontally.
11. The method of Claim 8 further comprising:
 - (f) releasing the corner of the article of laundry on top of a conveyor.

12. The method of Claim 8 further comprising:
 - (f) isolating the corner prior to (b) with a pinch roller.
13. The method of Claim 8 further comprising:
 - (f) dropping a portion of the article of laundry on a belt due to (d); and
 - (g) moving a belt.
14. An apparatus for spreading an article of laundry from a load of articles of laundry, the apparatus comprising:
 - a conveyor operable to convey the article of laundry;
 - a jaw adjacent an end of the conveyor; and
 - a sensor adjacent the conveyor, the sensor operable to detect a trailing corner of the article of laundry on the conveyor;wherein the jaw is responsive the sensor detection of the trailing corner of the article of laundry, the jaw operable to press against the article of laundry on the conveyor adjacent to the trailing corner.
15. The apparatus of Claim 14 wherein an area below the jaw is free of obstruction such that at least part of the article of laundry hangs downward from the conveyor.
16. The apparatus of Claim 15 further comprising a pair of pinch belts adjacent the conveyor, the pinch belts running in a substantially same direction as the conveyor, the pinch belts operable to hold a section of the article of laundry spaced away from the trailing corner such that an edge of the article of laundry connected with the trailing corner hangs down about 180 degrees to 135 degrees from the trailing corner where straight up is 0 degrees and horizontal towards the pair of pinch belts is 90 degrees.

17. The apparatus of Claim 15 further comprising a pair of clamps positioned on a rotatable arm, the pair of clamps operable to rotate to an edge of the article of laundry suspended from the conveyor.

18. A method for spreading an article of laundry from a load of articles of laundry, the method comprising:

- (a) conveying the article of laundry along a surface and off an end of the surface;
- (b) sensing a trailing corner of the article of laundry on the surface; and
- (c) pinching the trailing corner against the surface adjacent the end of the surface in response to (b).

19. The method of Claim 18 wherein (a) comprises conveying the article of laundry off the end wherein an area below the end is free of obstruction such that at least a part of the article of laundry off of the surface hangs downward from the conveyor.

20. The method of Claim 18 further comprising:

- (d) holding a section of the article of laundry spaced away from the trailing corner; and
- (e) conveying the section off of the surface and in a substantially same direction as the article of laundry is conveyed on the surface.

21. The method of Claim 20 wherein (d) comprises holding the section such that, after (c), an edge of the article of laundry connected with the trailing corner hangs down about 180 degrees to 135 degrees from the trailing corner where straight up is 0 degrees and horizontal towards the pair of pinch belts is 90 degrees.

22. The method of Claim 18 further comprising:

- (d) clamping an edge hanging down from the corner after (c).

23. An apparatus for spreading an article of laundry from a load of articles of laundry, the apparatus comprising:
 - a first clamp operable to clamp a first corner of the article of laundry;
 - a second clamp positioned away from the first clamp and operable to clamp a bunch of the article of laundry, the bunch spaced from the first corner; and
 - a third clamp operable to clamp an edge of the article of laundry connected with the first corner while the article of laundry is suspended from the first corner and the bunch when clamped by the first and second clamps.
24. The apparatus of Claim 23 wherein the first clamp comprises a conveyor and a pinch roller, the conveyor operable to convey the article of laundry such that the first corner is positioned beneath the pinch roller.
25. The apparatus of Claim 23 wherein the second clamp comprises a pair of pinch belts operable to clamp and convey the bunch.
26. The apparatus of Claim 23 wherein the third clamp comprises a rotating arm with at least two sets of jaws.
27. A method for spreading an article of laundry from a load of articles of laundry, the apparatus comprising:
 - (a) clamping a first corner of the article of laundry;
 - (b) clamping a bunch of the article of laundry, the bunch spaced from the first corner; and
 - (c) clamping an edge of the article of laundry connected with the first corner while the article of laundry is suspended from the first corner and the bunch after (a) and (b).
28. The method of Claim 27 wherein (a) comprises:
 - (a1) conveying the article of laundry on a surface;

- (a2) sensing a trailing corner; and
- (a3) clamping the trailing corner.

29. The method of Claim 27 wherein (b) comprises positioning a bunch between a pair of pinch belts;

further comprising:

- (d) conveying the bunch between the pinch belts.

30. The method of Claim 27 wherein (c) comprises rotating a clamp to the edge, further comprising:

- (d) rotating the clamp;
- (e) suspending the edge of the article of laundry from the clamp

adjacent to a feed input.

31. An apparatus for spreading an article of laundry from a load of articles of laundry, the apparatus comprising:

a first moveable clamp;

a second moveable clamp;

a conveyor operable to convey the article of laundry away from the first and second clamps, the conveyor having a center line parallel with a direction of conveyance;

wherein the both the first and second moveable clamps are operable to clamp the article of laundry while positioned on a first side of the center line and both the first and second moveable clamps are operable to move to a second side of the center line opposite the first side while clamping the article of laundry, the first clamp operable to release the article of laundry on the second side and the second clamp operable to release the article of laundry on the conveyor;

a jaw adjacent an end of the conveyor;

a sensor adjacent the conveyor, the sensor operable to detect a trailing corner of the article of laundry on the conveyor, wherein the jaw is responsive the

sensor detection of the trailing corner of the article of laundry, the jaw operable to press against the article of laundry on the conveyor adjacent to the trailing corner;

a third clamp positioned away from the jaw and operable to clamp a bunch of the article of laundry, the bunch spaced from the trailing corner; and

a fourth clamp operable to clamp an edge of the article of laundry connected with the trailing corner while the article of laundry is suspended from the trailing corner and the bunch when clamped by the third and fourth clamps.

32. A method for spreading a rectangular article of laundry from a load of articles of laundry, the method comprising:

- (a) identifying a first corner on a first short edge of the article of laundry;
- (b) holding a bunch, the bunch being adjacent a second short edge, the second short edge opposite the first short edge;
- (c) releasing the first corner;
- (d) identifying one of the first corner and a second corner on the first short edge after (c); and
- (e) clamping the first short edge while holding one of the first and second corners and the bunch.